A NEW SPECIES OF PSEUDOPHYLLINE KATYDID FROM COCOS ISLAND, COSTA RICA (ORTHOPTERA: TETTIGONIIDAE)[1]

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ABSTACT: A pseudophylline katydid, *Parascopioricus binoditergus* Nickle new species, is described and figured for the first time. It occurs only on Cocos Island, off the coast of Costa Rica, and displays characters that are intermediate between species of *Parascopioricus* and *Scopioricus*.

In his revision of the Pseudophyllinae, Beier (1961: 283) segregated two species of *Scopioricus* and placed them with an additional new species within a new genus, *Parascopioricus* Beier 1961. These species, *P. lancifolius* (Brunner von Wattenwyl), 1895 [type species], *P. carinulatus* (Saussure and Pictet), 1897, and *P. cordillericus* Beier, 1961, differed from *Scopioricus* in the spination of the ventral carinae of the fore and mid femora and in the shape of the apex of the tegmen. In *Scopioricus* both ventral carinae of the fore and mid femora have spines, and the apex of the tegmen is rounded. in *Parascopioricus* only one ventral carina of the fore and mid femora has spines, and the apex of the tegmen is lanceolate or nearly so.

In a faunal survey of the insects of Cocas Island, Costa Rica, Hogue and Miller (1981) collected five specimens of an undescribed species of pseudophylline katydid with characters that most closely align it with *Parascopioricus*. The pronotum is rugose, crenulated, with lateral lobes that are about as wide as deep; the fore and mid femora are each armed with spines on only one ventral carina; the male subgenital plate bears two styles; the male cerus is not branched; and the ovipositor is smooth, lacking rows of oblique or transverse nodes. However, it differs from members of that genus in several respects: the apex of the tegmen is acutely rounded and more similar in shape to those of *Scopioricus* species; the male cercus, though not branched, is acutely upcurved and lanceolate, similar to the cerci of *Scopioricus* species; and all genicular lobes are unarmed, again more characteristic of *Scopioricus* species.

It is likely that the separation of species into *Scopioricus* and *Parascopioricus* as distinct genera is unjustified, based as it is on the spination of the ventral carinae of the fore and mid femora and shape of the apex of the tegmen. Within other genera of tettigoniids one can find both

[1]Received July 15, 1982

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extremes of characters (Hebard 1925; Ragge 1980), and it is possible that they will be synonymized when more information is acquired for these species. However, for the present, it seems expedient to follow a conservative approach and describe this as a new species of *Parascopioricus,* the genus to which it keys in Beier (1961: 283).

The description will serve to make a name available for a paper on the insect fauna of Cocos Island (Hogue *et al.,* in preparation). Specimens have been deposited in the Los Angeles County Museum, Los Angeles [LACM], California Academy of Sciences, San Francisco [CAS], U.S. National Museum of Natural History, Washington, D.C. [NMNH], and American Museum of Natural History, New York [AMNH].

Key to the Species of ***Parascopioricus***

1	Tegmina no more than 4 times as long as wide, anal margin moderately to strongly convex; margins of pronotum well-developed only in the lateral metazona 2
1'	Tegmina 5 times as long as wide, anal margin weakly convex; margins of pronotum well-developed along entire lateral margin (Costa Rica) ..... *carinulatus* (Saussure and Pictet)
2(1)	Male cerci short, thickened basally; male subgenital plate weakly emarginate apically; female subgenital plate bifid 3
2'	Male cerci long and slender, straight; male subgenital plate deeply excised apically; female subgenital plate broadly rounded (Panama, Colombia) ..... *lancifolius* (Brunner von Wattenwyl)
3(2)	Male tenth tergite apically elongate, rounded; female subgenital plate terminally emarginate, with triangulate, pointed, tapering lobes; smaller species (♂, 17-19 mm; ♀, 20-23 mm) (Colombia) ..... *cordillericus* Beier
3'	Male tenth tergite apicolaterally expanded into two clawlike projections, each terminating in a sharp, ventrally-curved tooth; female subgenital plate emarginate, with rounded lobes; larger species (♂, 35-37 mm; ♀, 38-42 mm) (Cocos Island) ..... *binoditergus* Nickle, new species

Parascopioricus binoditergus Nickle, new species

Diagnosis. Male. This species differs from other species of *Parascopioricus* in the shapes of the tenth tergite and the cercus. The tenth tergite is produced well beyond the apices of the cerci, concealing them from above, and is belaterally extended into two broad, tapering lobes, each terminating apically in a deflexed tooth. The cercus is basally thick and cylindrical, abruptly narrowed and recurved acutely upward, and is apically sharp and lanceolate.

Female. The shape of the tegmen, which is similar to that of the male, is apically acutely rounded (as in Fig. 1), and the subgenital plate is broad with a wide U-shaped emargination, producing a rounded bifid apex (Fig. 9).

Holotype. ♂. COSTA RICA: Cocos Island, Wafer Bay, on beach at Wafer Bay Station III-26-1978 (C. Hogue and S. Miller, Steele Exped.) #1 [LACM].

Description of holotype. Head. Eyes small, prominent, globose; diameter of eye equal to about 1/2 length of subocular genal length; lower margin of eye confluent with ventral margin of antennal insertion. Frons and vertex narrow, 0.3-0.4 mm wide: vertex apically rounded, extending horizontally slightly beyond frons and separated from it by a distance equal to apical diameter of vertex.

Thorax. Pronotum saddle-shaped, with a weakly-expressed median ridge interrupted twice by an anterior shallow and posterior deep lateral sulcus. Posterior lateral sulcus entire, extending along midline of pronotum and lateral lobes to their ventral margins. Anterior lateral sulcus also extending to ventral margin of lateral lobe but more weakly expressed, becoming obscure along its course. Pronotum rugose, crenulate. Lateral lobe of pronotum quadrate, about as deep as wide; ventral margin of lateral lobe with a blunt, ventrally-directed tooth just below termination an anterior lateral sulcus. Prosternal spines slightly shorter and narrower than mesosternal spines, separated by a distance equal to length of spine. Metasternal spines shorter still, separated from mesosternal spines by a distance equal to three times as great as distance between pro- and mesosternal spines.

Wings. Tegmina oval, extending just beyond tip of abdomen; acutely rounded apically; costal margin subtruncate; anal margin convex. Stridulatory field as in Fig. 2; mirrors of fields on both tegmina depressed by recurvature of anal margins of tegmina, producing a sharp ridge along median vein; accessory veins surrounding trapezoidal, translucent mirrors, inflating edges of anal margins of tegmina at region of stridulatory field. Stridulatory file with 78 teeth, 26 teeth/mm (Fig. 3). Hind wing translucent, light green, in repose concealed completely beneath tegmina.

Legs. Procoxal spine present. Ventral margins of left and right fore femora with 4-0 and 3-0 spines, respectively; ventral margins of left and right mid femora with 0-1 and 0-2 spines, respectively; ventral margins of left and right hind femora with 0-9 and 0-6 spines, respectively. Tympana concealed on both sides; tympanal shields closely appressed to tibial surface, barely inflated; shield openings slit-like. Genicular lobes of all legs unarmed.

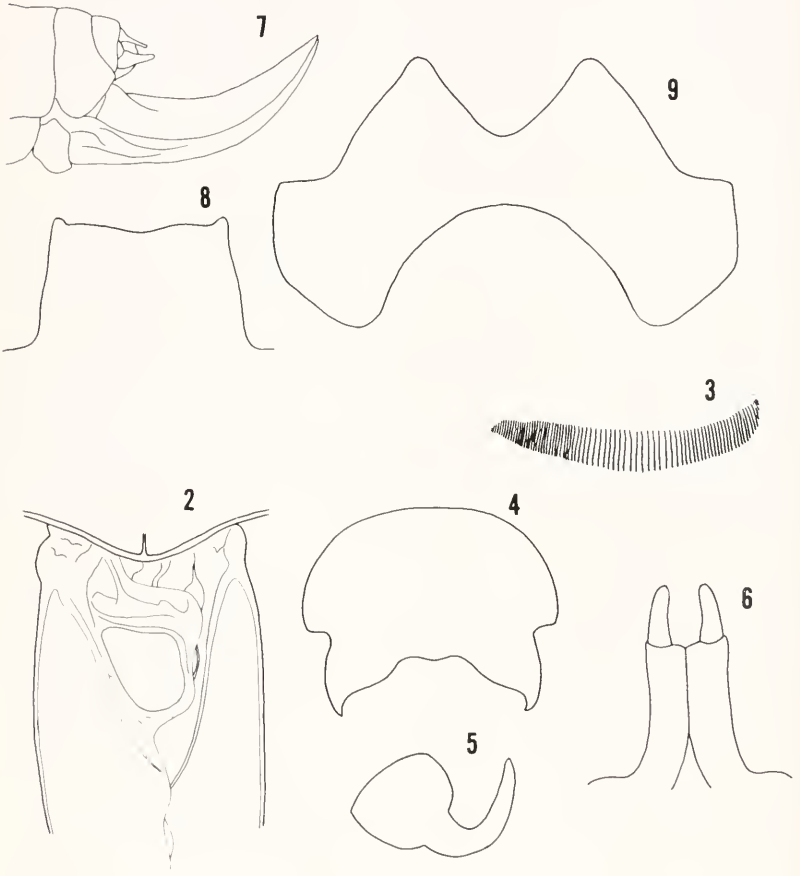
External Genitalia. Tenth tergite inflated, medio-apically depressed; apical margin produced beyond apices of cerci, concealing them in dorsal view. Posterior margin of tenth tergite lobes on either side of medial depression, with each lobe terminating in a well-developed deflexed tooth (Fig. 4). Basal half of cercus inflated, round in cross-section; distal half abruptly narrowing and recurving vertically, distally lanceolate and terminally pointed (Fig. 5). Subgenital plate elongate, upcurved, extended distally beyond apex of tenth tergite; mediobasally keeled, apically depressed, and terminating with two short, stout, articulating styles (Fig. 6).

Figure 1. *Parascopioricus binoditergus,* new species. Holotype. Left lateral habitus.

Internal Genitalia. Not examined in holotype, but apparently lacking sclerotized or pigmented structures.

Color. Uniform leaf green. Fuscous areas limited to Cu_2 vein on stridulatory field. Basal third of antennae annulate, with dark brown rings.

Allotype. ♀. COSTA RICA: Cocos Island, Rio Genio III-25-1978 (C. Hogue and S. Miller, Steel Exped. 1978) [LACM].



Figures 2-9, *Parascopioricus binoditergus*, new species: Figs. 2-6, holotype. Figs. 7-9, allotype. 2, stridulatory field; 3, stridulatory file, left tegmen; 4, tenth tergite; 5, left cereus; 6, subgenital plate; 7, left lateral abdomen; 8, supra-anal plate; 9, subgenital plate. Figs. 5 and 7 are lateral views; 2, 4, and 8 are dorsal views; and 3, 6 and 9 are ventral views.

Description of allotype. Similar to holotype in nonsexually related characters. Differs from holotype in number of spines on ventral margins of femora: both fore femora with 5-0 spines; mid femora with 0-3 spines; hind femora with 0-5 (right) and 0-6 (left) spines.

External Genitalia. Abdominal tergites gradually becoming narrower successively from VII to X. Terminal tergite unmodified; in lateral view, lateral edge concealing base of cercus. Supra-anal plate flat, quadrate; distal edge directed posteriorly; lateral corners extending beyond distal edge as small papillae (Fig. 8). Cercus short, slightly longer than supra-anal plate, simple, cylindrical, curving medially along its length, slightly more constricted at distal third and curving more abruptly to the apex. Ovipositor about twice as long as pronotum, gradually upcurved across its length, sickle shaped, apically pointed, and minutely serrated along distal third of both dorsal and ventral valves; surface of ovipositor smooth, lacking oblique or transverse ridges (Fig. 7). Basal lobe of ovipositor oval, partially concealed dorsally by ventral margin of terminal tergite and ventrally by an expanded ridge of ventral valve of ovipositor. Subgenital plate spatulate, apically bifid, with a broad U-shaped emargination separating rounded furcae (Fig. 9).

Paratypes. 2♂♂, 1♀. COSTA RICA: Isla del Coca [Cocos Island], Bahia Chatham III-8-1964 (R.O. Schuster) 1 ♂, 1♀ [CAS. NMNH]; Cocos Island, Wafer Bay III-1963 (P. Slud) 1 ♂ [AMNH].

Variation. The number of spines on the ventral margins of the femora varies among individuals and on either side of the same individual. Previous studies (Hebard 1925; Ragge 1980) conclude that the number of spines are irrelevant as a taxonomic character, although their presence or absence may carry some relevant information at the generic level. The Cu_2 veins of the male paratypes are not nearly as fuscous as in the holotype, but portions of other adjoining veins are fuscous.

Measurements. (means, range, mm). Total length, ♂ 36.0 (35.3-36.8), ♀ 40.3 (38.0-42.6). Pronotum length, ♂5.6 (5.4-5.7), ♀ 5.8 (5.6-6.0). Pronotum width, ♂ 5.6 (5.4-5.8), ♀ 5.9 (5.8-6.1). Tegmen length, ♂ 30.2 (29.2-30.9), ♀ 32.3 (31.5-33.1). Tegmen width, ♂ 9.9 (9.3-10.2), ♀ 10.0 (9.8-10.1). Fore femur length, ♂9.3 (8.9-9.6), ♀ 10.2 (9.8-10.6). Hind femur length, ♂ 21.0 (20.4-21.3), ♀ 22.4 (20.4-23.1). Length subgenital plate, ♂ 7.4 (7.2-7.6). Length ovipositor, ♀ 12.8 (12.6-12.9). Mean number of spines on ventral margins of femora: ♂ (4-0, 0-2, 0-6), ♀ (4-0, 0-2, 0-5), medial and lateral margins of fore, mid, and hind femora, respectively.

Etymology. (Lt.) *bi-* two; *node-* node, projection; *tergus-* tergite; referring to the apical modification of the male tenth tergite into two projections, a feature lacking in other species of *Parascopioricus*.

Discussion. *Parascopioricus binoditergus* is the second species of pseudophylline katydid considered to be endemic to Cocos Island. The other species, *Cocconotus bellicosus* Rehn, described in 1902 from a single female, has been collected more recently by Hogue and Miller. The two species are not related, *Parascopioricus* belonging to the tribe Pterophyllini and *Cocconotus* to the Cocconotini. The nearest relatives to both species occur on the South American mainland in Columbia. Since Cocos Island is nearly midway between South America and the Galapagos Archipelago, one might expect the fauna to be related. Such is not the case, however, for the pseudophylline fauna on the Galapagos chain is limited to yet another

unrelated species, *Nesocoecia cooksoni* (Butler) (Hebard 1920), which may be a complex of several species. Beier (1961) synonymized three described species into one, but he apparently made the synonymy in part on the circumstantial evidence that no males are known for one species (McNeill 1901). This species is a brachypterous member of the Cocconotini, and its origins are more obscure, since its only known relatives occur in the Yucatan Peninsula in Mexico and in Bahia, Brazil.

Based on the shape of the male cercus, the elongate male tenth tergite, and the bifid subgenital plate of the female, *P. binoditerugs* appears to be most closely related to the Colombian species *P. cordillericus.*

ACKNOWLEDGMENTS

The author expresses his appreciation to Mr. Scott Miller, Harvard University, Cambridge, Mass., for securing the specimens and supplying information about this species. The author appreciates the comments and criticism of the manuscript that were provided by Drs. A.S. Menke and D.D. Wilder of the Systematic Entomology Laboratory, IIBIII, USDA, and Dr. J.J. Whitesell, Valdosta State College, Valdosta, Ga.

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NOTICE OF SURVEY RESULTS

In the March - April, 1982 issue of ENT. NEWS a card insert asked members to express their opinion concerning the possible inclusion of brief news reports, possibly as "fillers", about society meetings, proceedings, and other activities, as well as doings of society members. We wish to thank those members who responded, sixty percent of whom indicated they would very much like to have this material included in future issues. The first of these reports appears in this issue.

— Ed.